

## REMARKS

Claims 1 – 20 and 22 – 36 are pending. Claims 22 – 30 are allowed. Claims 1 – 20 and 31 – 36 are rejected.

The applicants' attorney amends claims 1, 15 and 31. The applicants' attorney respectfully asserts that claims 1 – 20 and 31 – 36, as amended, are in condition for allowance for the reasons discussed below.

### Rejection of Claims 1 – 14 under 35 U.S.C. §103(a)

The applicants' attorney respectfully asserts that claim 1, as amended, is allowable over German Patent 576 895 issued to Meffert (Meffert) and U.S. Patent 4,690,341 issued to Hise *et al.* (Hise), because Meffert and Hise each fail to disclose continuously accelerating toward an impact speed each particle inserted into a channel of a throwing wheel.

The applicant's claim 1, as amended, recites a throwing wheel having a channel and operable to continuously accelerate each particle that the channel receives toward an impact speed.

For example, as shown in FIGS. 2A, 2B, and 3, and discussed in paragraphs 30 – 38 of the specification, a device 20 for fragmenting particles of material includes a throwing wheel 22 to accelerate particles of material toward an impact speed, an impact rotor 24 to fragment the particles after they leave the throwing wheel 22, and a motor 28 to rotate the throwing wheel 22 and impact rotor 24. The throwing wheel 22 includes a channel 44 that is enclosed to direct the particle toward an exit 46 of the throwing wheel 22. In operation, a particle of material enters the channel 44 through an entrance (not numbered) in the hub 42. Each particle that enters the channel 44 then accelerates as it travels through the channel toward the exit 46. The particle then leaves the throwing wheel 22 through the exit 46 traveling on a desired trajectory and at a desired speed. As the particle travels through the channel 44, the particle continuously accelerates toward an impact speed.

In contrast, Meffert fails to disclose continuously accelerating toward an impact speed each particle inserted into a channel of a throwing wheel. Meffert discloses a grinding device (not numbered but shown in FIG. 1 (Abb. 1)). The device includes disk a (FIGS. 1 – 3 (Abb. 1 – 3)) that rotates to throw particles, an impact ring b (FIGS. 1 – 3) that also rotates and fragments particles thrown from the disk a, and a funnel (FIGS. 1 and 2 not lettered) to feed particles to the disk a. Please note that the letter a in FIG. 2 has been drawn on the funnel, suggesting that the funnel is labeled a. This suggestion, however, is not consistent with FIGS. 1 and 3 that have the letter ‘a’ drawn on the disk that rotates to throw particles. The disk a includes vanes (not lettered but shown in FIGS. 1 – 3) that extend up away from the top surface of the disk a and hit particles that contact the disk a. In operation, particles are dropped through the exit of the funnel onto disk a (see FIG. 2). As the disk a rotates, one or more of the vanes sweeps across the path of the dropping particles and hits the particles. The particles then travel in many directions, one of which may be toward a rib c (FIGS. 2 and 3) of the impact ring b. When the particles collide with one or more ribs c, they fragment. Because most of the particles that the vane hits do not remain in contact with the vane or other parts of the disk a, the disk a does not continuously accelerate each particle that the disk a contacts. Therefore, unlike the applicants’ claimed throwing wheel 22, Meffert’s disk a does not continuously accelerate each particle that it contacts toward an impact speed.

Also in contrast, Hise fails to disclose continuously accelerating toward an impact speed each particle inserted into a channel of a throwing wheel. Hise discloses an impact crusher 12 (FIG. 1) that includes impact surfaces 26 (FIG. 1) that particles collide with to be fragmented, an impeller table 10 (FIG. 1) that throws particles against the impact surfaces 26, and a feed tube 14 (FIG. 1) through which particles enter the impeller table 10. The impeller table 10 includes two channels (not numbered) defined by cylindrical walls 56, 58 (FIG. 4) and liners 48 (FIG. 3A) and 66 (FIG. 4), and each channel has a discharge port (also not numbered). *Col. 2, lines 60 – 66.* The impeller table 10 also includes a plate 84 (FIG. 4) adjacent each discharge port to which removable wear components 80 and 86 may be mounted. The plate 84 is situated in the channel such that the width of each discharge port is less than the width of each channel, as shown in FIG. 4. In operation, particles enter the channel between the two

discharge ports and are thrown toward one of the discharge ports by the counterclockwise rotation (when viewed from above) of the table 10. See *Figs. 1 and 4*. Initially, when particles enter the channel, some of them are thrown against the plate 84 and remain lodged in the region of the channel where the walls 56 and 58 meet a respective one of the plates 84. Then, subsequent particles are thrown against the lodged particles and rub across the lodged particles as they proceed toward the discharge port. Thus, some of the particles that enter the channel remain trapped in the channel before they are thrown through the discharge port at an impact speed. Therefore, unlike the applicants' throwing wheel 22, Hise's impeller table 10 does not continuously accelerate each particle that enters the table's channel toward an impact speed.

Claims 2 – 14 are patentable by virtue of their dependencies on claim 1, as amended.

#### **Rejection of Claims 15 – 20 under 35 U.S.C. §103(a)**

Claim 15 is patentable over Meffert and Hise for reasons similar to those recited above in support of claim 1 over Meffert and Hise.

Claims 16 – 20 are patentable by virtue of their dependencies on claim 15.

#### **Rejection of Claims 31 – 36 under 35 U.S.C. §103(a)**

Claim 31 is patentable over Meffert and Hise for reasons similar to those recited above in support of claim 1 over Meffert and Hise.

Claims 32 – 36 are patentable by virtue of their dependencies on claim 31.

#### **Conclusion**

The applicant's attorney respectfully requests the examiner withdraw his rejection of claims 1 – 20 and 31 – 36.

Should any additional fees be required, please charge them to Deposit Account No. 07-1897.

If the examiner believes that a phone interview would be helpful, he is respectfully requested to contact the Applicants' attorney, John Janeway, at (425) 455-5575.

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Respectfully submitted,

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